Project Control Document:
Risk Mitigation Strategy

SAWS C-IV Consortium

Contents

Summary of Revisions

This page reflects the modifications made since the last Project Control Document Update was delivered

Summary of Revisions to the C-IV Project Risk Mitigation Strategy

Section	Comments
Risk Mitigation Objectives	• None
Risk Mitigation Scope	• None
Risk Mitigation Roles and Responsibilities	• None
Risk Mitigation	• None
Samples	• None
Sample C-IV Project Risk Matrix	• None
Risk Calculation and Examples	• None

Risk Mitigation Objectives

The objectives of the Risk Mitigation Strategy are:

- To focus attention on minimizing threats to achievement of the C-IV project objectives.
- To provide a systematic approach for:
  - Identifying and assessing risks;
  - Determining cost-effective risk reduction actions;
  - Monitoring and reporting progress in reducing risk.

The overall goal of this process is to progressively reduce the project's exposure to events that threaten accomplishment of its objectives by:

- Incorporating approaches into the project plan that minimize or avoid identified risks;
- Developing proactive, contingent risk response actions; and
- Rapidly implementing risk responses based on timely identification of risk occurrence.

Risk Mitigation Scope

This document sets out the approach to the procedures and processes whereby initial and ongoing risks can be identified, categorized, quantified, controlled, and reported.

Risk Mitigation Roles and Responsibilities

Overall the Project Management sets scope and direction of Risk Mitigation. They are responsible for ensuring that risks are appraised in a continuous process throughout the development life-cycle.

· **High-level Responsibilities** - General responsibilities are:
  - Overall direction: Project Director;
  - Plan Development and Execution: Project Manager;
  - Counsel and assistance regarding risk identification/assessment/analysis/handling. All other members of the Project Management team.

- **Lower-level Responsibilities** - Each team will conduct risk mitigation activities addressing those risks that are pertinent to it. These activities will be the responsibility of the assigned Team Leads, assisted by other members of their team as appropriate.

Overview of Project Risk Mitigation Roles and Responsibilities:

- Develop and maintain Project Risk Mitigation Strategy
- Identify overall project risks
- Assess and analyze risks
- Incorporate risk mitigation/avoidance approaches into the Project Plan
- Develop contingent risk responses
- Monitor and identify risk occurrence
- Implement risk response actions based on risk occurrence
- Document and report risks and risk reduction via:
  - Project Risk Watch List
  - Project Risk Matrix

- Project Risk Profile

Risk Mitigation Process

The risk mitigation process is an iterative cycle which is performed initially during Project Planning and thereafter following newly identified risks. These new risks may arise from a variety of sources:

- New risks previously missed or unforeseen;
- New risks arising from an approved change request, where cost, schedule, or scope may be amended, impacting the critical path;
- New risks arising from major issues progressed from the Work Unit level;
- Further risks arising from current risks whose response requires investigations;
- Further risks arising from the 1outcome' or consequence of a separate risk occurrence.

Risk mitigation is commonly approached in five sequential phases shown below:

1. **Planning** - Concerned with focusing attention on Project risks, and identifying and documenting the major risks which may impact progress.
2. **Assessment** - Risks are documented into characteristic categories (e.g. technical, operational~ etc.), and are quantified on a numerical scale according to likelihood, impact, and level of control.
3. **Analysis** - Appropriate responses are developed to minimize the 1realization1 of each risk, and are documented according to characteristic actions (e.g. avoidance, acceptance~ transfer, etc).
4. **Handling** - Risk handling across the Project and Work Unit levels permit the ongoing evaluation, aggregation, and status reporting of risks to reduce the overall risk exposure.
5. **Reporting** - To provide visibility of risks and progress in mitigating them, the reports will be provided on a regular basis.

Risk Planning

Focus on Risks

Focusing attention on the value in determining risks facing each area of concern, and ensuring that risk planning is not perceived solely as an administrative exercise, is a process driven by the Project Management.

Initially, focusing management attention on Area level risks is assisted by reviewing the following information sources for direction:

- Risk and Constraints;
- Project Area Descriptions and deliverable definitions;
- Existing Project documentation, or documentation employed from other Projects;
- Knowledge transfer from functional/technical experts with experience in similar Projects, application software, or technology platforms;
- Reviewing previously identified risks from similar development Projects.

Typically, the production of a 'baseline' of the areas where initial risks are likely to be identified is useful

for developing and refining the risk and its response further.

Documentation of Risks

The risks identified by Project Management and Team Leads are documented into specifically defined, tangible risk items, for which a response/action may be well-defined and be measurable. This ensures that all analyses and reporting of risks maintain a deliverable-focus, for which progress towards high level objectives can be compared.

Identifying vague or non-specific risks results in responses/actions which are ambiguous, intangible, unclearly defined, and difficult to implement adequately.

Additionally, it is important not to attempt to document all possible risks and outcomes, as this can often introduce improbable scenarios, which:

- Create unnecessary concern and confusion;
- Shift the focus away from the 'real or probable risks;
- Dilute the pool of risks, leading to diminishing returns on effort;
- Reduce credibility for the risk mitigation process.

Risk documentation is more concerned with identifying the areas where the consequences of the risk are most severe, and where corrective responses or actions will produce the largest benefits in risk reduction.

Furthermore, risk documentation takes the areas, identified during focusing, where risks are most likely to occur and develops detailed assessment criteria from which specific risks are documented. Typical sources of assessment criteria are shown below (these are further categorized in section "Risk Assessment"):

- Unrealistic budget or schedule estimates;
- Delivery on critical path, or unrealistic deliverable and milestone deadlines;
- New technologies and platforms~ complex/leading edge technologies, and complex environments;
- Functionally complex data models, including processing functionality;
- Staffing considerations for experts, numbers, and experience required;
- External dependencies, including legislative changes.

The C-IV project will be using BI Designer to document and report risks. The Project Management team will develop the standards and guidelines for using the Risk Mitigation tool. These standards will also include the security rules for who can create or update risks. Once these are developed they will be distributed to the project team. The team will also receive training on the use of the tool.

Risk Assessment

Categorization of Risks

Risk categorization is achieved by defining five characteristic sources of risks. These describe the generic areas where specific risks are likely to occur, and formalize the categorization initially performed during Risk Planning:

Cost

Cost-based risks outline the non-achievement of the financial benefits of the C-VI Project. These cost risks include additional costs in changing/ solving design, application program, or operational problems.

Schedule

Schedule-based risks focus on the non-achievement of the C-VI System or benefits within the specified time-frame. These schedule-based risks arise from extensions from scope changes, resource unavailability, and additional schedule extensions from solving those risks outlined in 'Cost' above.

Technological

Technology-based risks consider the non-achievement of the application specifications and benefits expected. These risks include new/ non-standard platform technology, integration problems with existing systems, migration problems~ performance expectations not achieved, environment complexity and functionality, and system operability.

Operational

Operational-based risks focus on the peripheral organizational and business operational re-engineering changes, arising from the C-VI system development. These risks consider both the transitional and the long-term effects of the System's introduction, including the organizational and behavioral change required the human and physical resource planning, and communication required to facilitate a smooth transition to the new structure.

External

External-based risks consider the 'environmental' factors largely outside of the control of the Project Management, which can directly/indirectly affect the successful delivery of the Project. Risks arising from legislative regulations, legal requirements and the strategic direction and priority conflicts of a controlling body, are profiled under this category.

The Cost and Schedule risk sources are known as the risk 'indicators', as they are often the most tangible measure of overall progress towards Project objectives or goals. The Technological, Operational, and External risk sources are referred to as risk 'drivers', as these are the sources of all Project risks, which additionally drive the Cost and Schedule risks.

The recognition that the management of the sources of Technological, Operational and External risk is inter-related to the management of Cost and Schedule risks is an important link in effectively responding and reporting risk-reducing activities.

Assessment of Risk Responses

Following specific definitions of the risks above, the most likely overall response to the risk should be decided. This may be an obvious set of actions which annul or limit the risk occurring, or alternatively may be an intuitive 'best guess' of the available actions which are likely to be effective.

The development of specific and discrete responses to each risk are analyzed further in section "Risk Analysis". However, initial 'reactions' to each risk are required to allow quantification of each risk, as described in section "Quantification of Risks" below.

Quantification of Risks

Risk quantification extends the value of the understanding, documenting and reporting on Project and Work Unit level risks, by attempting to assign each risk to a numerical scale. See section "Risk Calculation and Examples."

This introduces a common format to risk quantification based on easily understood numerical scales. These assist in realizing and focusing on the 'true' impact of each risk, and in the prioritization of the risk-reducing activities and responses identified.

The following three parameters for each risk are quantified:

Impact

This is an estimate of the overall scale of the impact following an occurrence of each risk. This is rated on the following scale:

6 *Critical impact;* threatens success of the Project

5 *Extreme impact;* significant disruption to successful delivery of Project objectives, products and benefits

4 *High impact;* significant disruption to Project schedule, cost, and products over the medium and long terms

3 *Medium impact;* progress disrupted with large extensions to schedule and cost, across short and medium terms

2 *Moderate impact;* progress disrupted with manageable extensions to short-term schedule and cost

I *Marginal impact;* exposure slight

Probability

This is an assessment of the probability of an occurrence of the risk, given the responses identified, and the other factors or risks on which it is dependant. This is rated on the following

scale:

6	*Extremely likely* occurrence
5	Very probable occurrence
4	*Probable* occurrence
3	*Possible* occurrence
2	*Unlikely* occurrence
1	*Highly improbable* occurrence

Level of Control

This indicates the relative control which can be exerted on the probability of the risk occurring. Moreover, Level of Control attempts to introduce a 'modifier' which quantifies the level of control which can be exerted over implementing that response. For example, the implementation of a risk response may need to be performed by an external contractor or body, and is outside of the direct control of the management team. This is a risk in itself, and is rated as follows:

6	*Total* direct control
5	*Extensive* direct control
4	*Moderate* 'hands-on' control
3	*Shared* or partnered control
2	*Minimal* realistic control
I	*No* control

Risk Analysis

Risk analysis forms the final step in the identification, development, categorization, and quantification cycle. It is primarily concerned with developing specific, discrete, and measurable responses to each risk.

This is not necessarily limited to the development of only one response per risk; two or more alternative responses may be defined, if the response to that risk is contingent on the outcome of a prior event.

Additionally, the combination of two or more interdependent risks is evaluated. The quantification or summation of individual risks which are linked may produce a different combined result to the individual totals, and should be recognized by area management during the quantification process.

Analysis of Risk Responses

The Initial steps in the risk analysis process consider the analysis of detailed risk responses to those risks which:

- May occur soonest in the development lifecycle, irrespective of probability;
- Are high impact, low level of control.

This is intended to cover any short-term exposure first, before considering overall Project risk reduction.

Overall, Project risk response analysis covers five characteristic responses, discussed below:

Avoidance

Avoidance-based responses are employed at any point in the development lifecycle where future planning work is performed. Typically most risk avoidance occurs during the project definition and planning phases of a Project, where objectives scope, key success factors, work breakdown, and Project outputs or deliverables are defined. An example of risk avoidance is the use of a stable, established technical solution in preference to an untried, or complex new technology. However, risk avoidance solutions may limit the ability to achieve high-level Project objectives, by unnecessarily constraining a desirable solution.

Control

Control-based responses occur at all points throughout the development lifecycle, and are typically the most common response. They identify an action or product that becomes part of the Team or area working plans, and which are monitored and reported as part of the regular performance analysis and progress reporting of the Project.

Acceptance

These describe the factors that may directly affect the success of the Project, but are outside of the sphere of influence of the Project Management, and can therefore only be 'accepted'. In addition, acceptance of risks as a response may be based on the cost-effectiveness of any available response or solution. An example: acceptance response could be created from a legislative or legal risk, over which no control could be leveraged.

Transfer

Transfer-based responses target the party who are best placed to analyze and implement the response to the risk, based on their expertise, experience, and suitability. Typical transfer responses include the sub-contracting to specialist suppliers who are able to reduce the overall risk exposure.

Investigation

Investigation-based responses do not define any mitigation for reducing an individual risk. They are responses to risks where no clear solution is identified, and further research is required. However, investigative responses should not be ignored, as they immediately and directly lead to a greater aggregated Project risk. This is because the probability quantifier for each risk includes the effect of the applied response~ for which there is none, and the level of control quantifier indicates the level of influence to apply that response, which is low.

Risk Handling

Individuals will list the identified risks and identify and record potential actions that could be taken to avoid or mitigate the risks. Actions will be identified which should be immediately incorporated into the project plan to partially reduce the risk, as well as actions which should be treated as contingent risk

responses. Also risk mitigation owners will be assigned to each risk. The end-result of this step in the process is the development of the Project Risk Mitigation Plan. This will be monitored using a Risk Watch List.

Risk Reporting

Project level risks will be initially identified as part of the Project Risk Mitigation Plan. To provide visibility of risks and progress in mitigating them, the following reports will be provided on a regular basis:

Title	Description
Project Risk Watch List	Tracks the status of risks and avoidance/mitigation actions originally identified in the *Project Risk Mitigation Plan.*
Risk Profile	Displays planned, actual and projected progress in reducing risks.
Project Risk Matrix	Summarizes each individual risk

The Project Management Office will prepare a Risk Watch List that summarizes the results of the previous risk mitigation process steps. This risk watch list is part of the Project Control Document distributed monthly. A sample of the Project Risk Watch List is included in the Sample section at the end of this strategy document.

A Risk Profile graphically portrays the project's exposure to risk. It shows the planned, projected (if different from the plan) and actual risk reduction achieved as the project progresses. The Risk Profile is created from the Risk Watch List and is a component of the project reporting packages. During the early stages of the project, it is a component of the Project Risk Mitigation Plan. A sample of the Risk Profile is provided in the Sample section at the end of this strategy document.

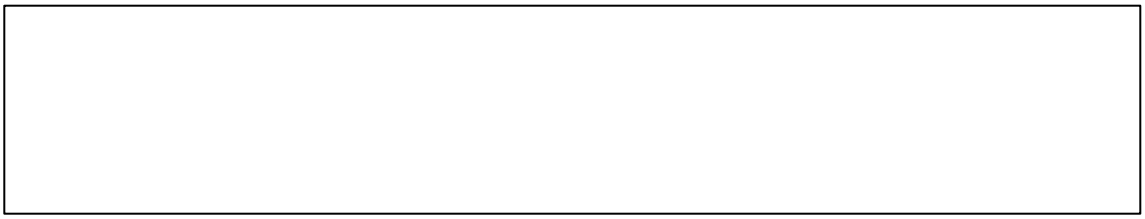
Samples

Sample Risk Watch List

Project Name: SAMPLE Project Project Manager: Manager Name

Risk Category	Statement of Risk	Risk Mitigation Approach	Current Assessment				
			Impact	Probability	Level of Control	Risk Factor	Completion Date
External	Quickly changing State or Federal regulations	Reduce product complexity to speed time to production	6	4	1	24	In Process
Operational	Aggressive Plan for recruiting new Call Center Representatives in tight labor market	Increase recruiting budget/effort	3	4	5	24	In Process

Sample Risk Profile



TIME

Sample C-IV Project Risk Matrix

Sample C-IV Project Risk Matrix

Statement of Risk	Impacts	Risk Mitigation Approach
Inadequate resources • Correct software, hardware and tools not available • Training sites not prepared on time or not properly equipped	• Project delays • Cost overruns, additional purchases • Alternate training sites/resources less effective than originally anticipated	Identification and commitment of resources • Clearly establish resource requirements to identify and schedule resources • Estimate and agree upon the numbers of people required • Review periodically to ensure requirements are being met • Work with Consortium to review requirements and assess progress • Obtain tools, equipment and training sites early, with enough time to review and approve their quality • Perform demonstrations and tests to resources are compatible and meet requirements
Changing business needs • Changes resulting from legislative, judicial and administrative decisions • Caseload increases faster than anticipated • Process change may occur	• New functionality may be required • Increased cost • Project schedule delays • Increased/decreased resource allocation • Changed priorities • Degraded response time • Need for equipment upgrades	Communication and design flexibility • Establish and maintain communications between the C-IV project management, C-IV project staff, and Accenture teams for quick notification and resolution • Jointly review requirements and negotiate changes • Analyze alternative approaches and business issue prioritization if changes are necessary • Implement change orders if scope changes are mandated • Have maintainable solution with easily upgraded hardware and software

Risk Calcu1ation and Examples

Risk Factor Calculation

In the numerical quantification a further parameter is defined, the risk factor. The risk factor attempts to numerically scale each risk according to its overall level of exposure, as shown in the mathematical expression below:

$$\text{Risk Factor} = \frac{\text{Probability x Impact}}{\text{Level of Control}}$$

This expression is frequently presented using an alternative 'Confidence' parameter, where:

$$\text{Confidence} = \frac{1}{\text{Profitability}}$$

It follows that a risk with a high probability, high impact and low Level of Control are those risks which indicate a high level of exposure. Similarly, those risks with a low probability, low impact, and high control offer the lowest levels of exposure.

Consider the five separate and independent risks, A to E, shown in the following example:

	Probability	***Impact***	***Level of Control***	***Factor***
Risk A	5	2	5	2
Risk B	4	2	5	1.6
Risk C	3	3	3	3
Risk D	5	3	5	5
Risk E	2	5	2	5

Both risks A and B have equivalent low levels of exposure, as shown in the risk factors. However, the impacts of each are arguably indistinguishable, whilst there are larger variations in each risk's probability.

Risks D and E however, which have equivalent extensive levels of exposure have a substantially wider gap in risk impact. Risk D carries a medium impact with progress disrupted over short/medium terms, whilst risk E carries an extreme impact with significant and costly disruption to the delivery of the Project. However, the probabilities range only from probable to unlikely.

The value in quantifying each risk according to the above formula comes not from being able to assign a numerical value to each parameter, but from the subjective decision-making experience of the senior management involved in understanding the relative importance of each parameter between each risk. It is through this focus that a true value-added process is achieved. Therefore, the model is designed only to be a catalyst for focusing Project Management on the relative importance of the risks perceived.

Risk Ratio Calculation

A number of mechanisms of 'graphing' the Project Risk Profile are available. A Common approach ***is*** to define the total risk ratio as a number between 0 and 1, where 0 indicates zero exposure or totally ceased risks, and 1 indicates initial exposure or all risks open.

To chart this ratio over time, the following mathematical expression is used:

$$\text{Total Risk Ratio (at time 't')} = 1 - \frac{\text{Sum of Risk Factors Expired/Ceased at 't'}}{\text{Sum of all Risk Factors}}$$

The assignment of numerical values to specific risks does not automate the process of risk assessment. For the risk profile, it forms a convenient base from which a trend analysis graph can be plotted. This allows the overall reduction in risk, overall comparisons, trends, and critical points to be readily understood over the lifecycle of the Project. The absolute values of the specific risk factors are unimportant.